

**Draft Attribute Table for Environmental Workgroup Discussion
Oroville Facilities Relicensing
April 23, 2003**

At the February 19, 2003 Environmental Work Group meeting, Work Group members suggested adapting a table used by PG&E during negotiations related to Lake Almanor. The following table has been modified for the Oroville Facilities Relicensing process, and has been designed to identify and describe the timing of resource constraints of the Low Flow Reach. This attribute table was developed using study results and stakeholder comments from Scoping Document 1.

The attribute table contains a list of physical and resource constraints which would assist in the development, evaluation, and implementation of potential protection, mitigation, and enhancement (PM&E) measures. The attribute tables provide a list of provisions over a course of the calendar year which must be taken into consideration for each potential PM&E. The attribute tables denote mandatory/primary elements and important secondary information related to the proposed Resource Action. Drivers have been assigned according to professional judgement of the Oroville Facilities Relicensing Team, and based on new information from ongoing study plans and input from various EWG members, may vary slightly during the course of the relicensing process. The primary drivers (solid bullets) identify limiting factors for PM&E measures, and the secondary drivers (open bullets) must be considered in the overall assessment of any project modifications and/or PM&E measures.

In addition to the attribute tables, a rationale for selection section is also included at the end of the table. This provides the various attribute constraints which would need to be considered before implementation of a resource action. While additional drivers or concerns may also be considered before implementation of a project modification, the rationale provided in this geographic section are those that would most need to be addressed for project modifications within the Low-Flow Reach of the Feather River. [i.e. Although specific key water temperatures are required for the section of river immediately upstream of the low-flow reach (water entering the Feather River Hatchery), the constraint for water temperatures in the low-flow reach are related to sustaining a healthy environment for growth and development of salmon and steelhead.]

Note: After review and comments from the EWG members, additional attribute tables will be developed for the remaining geographic reaches within the project (i.e. Lower Feather River, Thermalito Complex, Oroville Wildlife Area, and Lake Oroville and the Upstream Tributaries).

TABLE 1: ECOSYSTEM AND MANAGEMENT ATTRIBUTES FOR: Low-Flow Reach of the Feather River

Resource Constraints	Critical Season												Notes
	O	N	D	J	F	M	A	M	J	J	A	S	
Physical													
Water Temperature	○	○	○	○	○	○	○	○	○	●	●	●	Provide temperatures suitable for protected, sensitive, resident, or other desired fish species in the Lower Feather River.
Instream Flow	●	●	●	●	●	●	●	●	●	●	●	●	Provide flows in accordance with 1983 agreement that details flow requirements; goal of protecting spawning conditions for fall-run Chinook salmon, striped bass, and American shad, flow requirements balanced with operations.
Water Quality (Dissolved oxygen and ammonia)	●	●										●	Naturally high levels of ammonia and low levels of dissolved oxygen may occur in this section of the river due to high numbers of spawning salmon. Monthly monitoring to assess physical, chemical, and biological water quality as part of SP-W1.
Channel maintenance			●	●	●	●							High flows needed for sediment transport and recruitment of spawning gravel and large woody debris.
Biological													
Spring-run Chinook Salmon	●	●	○	○	○	○	○	○	○	○	●	●	Spring-run spawning from August to October, flows also needed at other times for upstream migration (July) and juvenile emigration (November to June).
Fall-run Chinook Salmon	●	●	●	○	○	○	○	○	○			●	Fall-run spawning and upstream migration (September to December) and juvenile emigration (December to June).
Steelhead	●	●	●	●	○	○	○	○	○	○	○	○	Steelhead spawning (October to February), rearing throughout the year, and emigrating from February to September.
Fish Passage						○	○	○					Passage at "Steep Riffle" during upstream migration periods for sturgeon.
Riparian Recruitment							●	●	●				Pulse flows with gradual recession needed for recruitment of primary riparian succession species (willow and cottonwood).

Swainson's Hawk						○	○	○	○	○	○		Nesting season from March to late August.
Bank Swallow								○	○	○			Nesting season from May to July.
Social													
Angling				○	○	○	○	○	○	○	●	●	Open season in low flow reach is January 1 through September 30.
Management													

○ = important/secondary driver = must be considered in overall assessment of any project modifications and/or PM&E measures.

● = mandatory/primary driver = limiting factor in determining project modifications and/or PM&E measures.

Note: The Primary and Secondary drivers were assigned according to professional judgement of the Oroville Facilities EWG Relicensing Team.

**Low-Flow Reach of the Feather River
Rationale for Selection
Ecosystem and Management Attributes**

PHYSICAL

Water Temperature: The Oroville Facilities are operated to provide temperatures suitable for the growth and development of salmon and steelhead at the Feather River Fish Hatchery. By meeting these temperature objectives, cold water is also provided to protect, sensitive, resident, or other desired fish species in the Low Flow Section of the Feather River, including temperature objectives at Robinson Riffle. Key months for meeting water temperatures objectives at Robinson Riffle are July, August, and September.

Instream Flow: There is a requirement to provide 600 cfs in the Low Flow Section of the Feather River in accordance with 1983 agreement between DWR and the California DFG.

Water Quality : Locally high concentrations of ammonia and low concentrations of dissolved oxygen due to decomposition of fall-run salmon carcasses may occur from September through December. Monthly monitoring is conducted to assess the physical, chemical, and biological water quality of the Low Flow Section, as described in Study Plan, SP-W1. This information is used to determine if the project-affected waters meet the California RWQCB's Basin Plan objectives and are protective of beneficial uses designated in the Basin Plan.

Channel Maintenance: The maintenance of fluvial process provides for balanced sediment transport, channel bed material mobilization and distribution, and channel structural stability distribution that contributes to a diverse aquatic habitat and healthy riparian habitat.

BIOLOGICAL

Spring-run Chinook Salmon: A primary concern is spring-run Chinook salmon while spawning (August to November). Adequate flows are also needed at other times for upstream migration (July) and juvenile emigration (November to June).

Fall-run Chinook Salmon: A primary concern is fall-run Chinook salmon for spawning (September to December) and juvenile emigration (December to June). Adequate flows are also needed throughout the year for rearing.

Steelhead: A primary concern is steelhead spawning (October to February) and emigrating juveniles from February to September.

Fish Passage: The concerns with fish passage relate to fish encountering migration barriers and high flows. Of particular concern is the upstream migration of sturgeon at Steep Riffle.

Riparian Recruitment: Properly functioning riparian systems provide shade and cover, moderate fluctuations in stream temperature, are a nutrient and energy source, temporarily store sediment, and contribute to habitat diversity. Pulse flows during the recruitment season are needed for the establishment of native riparian species (especially cottonwood and willows).

Swainson's Hawk: One nest site is known from the general vicinity of the this reach of the Feather River. Swainson's hawks could nest along the river during the course of the new license. Disturbance of these nest sites during the breeding season should be avoided during the course of the new license.

Bank Swallow: Bank swallows are not currently known to nest along the Low Flow Section of the Feather River. However, areas of suitable habitat could become occupied during the course of the next license. Disturbance of active nest colonies should be avoided during the nest season.

SOCIAL

Angling: Angling occurs in the low flow section the Lower Feather River year-round, however, angling is most concentrated in the months prior to the salmon spawning (from August through September 30). Portions of the low flow section are closed to fishing at various times of the year, these are identified by the California Fish and Game Code.

MANAGEMENT

As of yet, there are no management attributes which have been established for the development or evaluation of potential project modifications or PM&Es.